MODULARITY: THREE ARGUMENTS AGAINST, ONE PSEUDO-ARGUMENT FOR

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In this article three arguments are offered against the view that language is a mental module. First, language is not encapsulated vis-à-vis the extralinguistic reality, as shown by iconicity. Second, language is not encapsulated vis-à-vis the other cognitive domains, as shown by the pervasive analogies between all these domains, a fact which suggests their ultimate unity (or 'common source'). Third, language is not encapsulated vis-a-vis such cognitive domains as logic or social cognition, because it is not only analogous to, but (partly) identical, or overlaps, with the latter. Finally, those reasons are exposed that have misled some members of the field into thinking that language could be a mental module.

1. GENERAL REMARK

Fodor's (1983) original concept of 'module' has been watered down somewhat, insofar as the dichotomy 'a set of modules vs. the central processor' has been replaced by a continuum between 'rapid modules' and 'slow modules'; and today, there are not just modules proper but also 'interface modules' connecting modules proper. For the moment, at least, the following still seems to hold: Modules are "domain specific and informationally encapsulated" (van der Zee & Nikanne, 2000: 4); and 'language module' equals phonology & syntax, while 'conceptual system' (or what some people call 'semantics') is a module distinct from the 'language module'. It is this (residual) concept of modularity that will be scrutinized here.

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2. ICONICITY

Motto: "To account for or somehow explain the structure of UG, or of particular grammars, on the basis of functional considerations is a pretty hopeless prospect, I would think; it is, perhaps, even 'perverse' to assume otherwise" (Chomsky, 1975: 58).

It is the primary function of language (= linguistic form) to describe extralinguistic reality; Bühler (1934) called it Darstellungsfunktion. Iconicity shows that, contrary to what is claimed in our motto, this function largely determines the structure both of UG and of particular grammars.

It is a very old idea that language is a picture of the reality. The vicissitudes of this idea within the Western linguistic tradition, from antiquity via the Middles Ages to the end of the 20th century, have been described in UHL: Ch. 5. The current concern with iconicity is just the latest stage in this development. Notice that iconicity qua structural similarity between language and

reality is an instance of the more general concept of analogy.

At least the following ontological dimensions are relevant to the notion of iconicity: quality, quantity, order, and cohesion. Qualitative ontological distinctions include 'thing vs. action', 'agent vs. patient', 'human vs. non-human', 'animate vs. inanimate', 'factual vs. non-factual'. Quantitative ontological distinctions include 'one vs. many', 'less vs. more'. The basic ontological distinction of order is 'before vs. after'. The basic ontological distinction related to cohesion is 'perceptually (or causally) close vs. distant'.

These ontological distinctions are genuinely explanatory. Consider the distinction of order. If one event precedes another, this is an objective fact which cannot be construed as a matter of language only. In many languages, of two events referred to by two sentences, the temporally prior event must be referred to by the temporally prior sentence; in no language is the opposite the case. This is a linguistic universal, i.e. part of UG (but not of 'innate UG'), explained by iconicity.

Or consider cohesion. Givón (1990: Ch. 13), for instance, has shown that as the type of causation gets more and more indirect, the corresponding expressions get less and less cohesive. Here, however, we shall concentrate on the logically primary type of (linguistic) cohesion, namely:

A) Structure-Dependency
    Submottos: "There is no a priori reason why human language should make use exclusively of structure-dependent operations" (Chomsky, 1968: 52); "universals [like] structure-dependency are... certainly unexpected and non-intuitive" (Matthews, 1989: 69); similarly e.g. Lightfoot (1982: 67–68) and Crain & Nakayama (1987).

This is the counter-argument: "The explanation of structure-dependence, for instance, is self-evident. Linguistic structure reflects perceptual structure, in that they both exemplify what Jackendoff (1987: 249–251) calls 'headed hierarchy'. When I see a small boy eating a red apple, I see the smallness together with the boy and the redness together with the apple (rather than vice versa), and the NPs of my language (and, presumably, of any language) reflect this fact. Similarly, when I see a boy eating an apple, a man kissing a woman, and a dog chasing a cat, I see the boy together with the apple, the man together with the woman, and the dog together with the cat. The sentence-structures of my language reflect this fact: this is the only reason why I put the words boy and apple in the same sentence, instead of separating them by two sentences speaking about the man, the woman, the dog, and the cat" (CGP: 495–496).

If you are not convinced by the preceding quotation, maybe you prefer to be convinced by this one:

> "If two things react upon each other in our experience and we want to talk about them, whatever the device that is normally used for one (say, X) or for the other (say, Y), the result in what we say is going to be an XY or an YX. The words cat, bite, dog may be arbitrary, but if a dog bites a cat we can reasonably expect that these words will keep close company ... because the togetherness of words reflects the togetherness of things and events" (Bolinger, 1968: 218).

The same idea is asserted by Givón (1990: 970) and by Croft (1990: 179) with the aid of such terms 'proximity principle' and 'iconic-distance hypothesis'. The same idea can also be shown to ultimately underlie Hawkins' (1999) performance-based principle of 'Minimize Domains'.

B) Sign Language & Mental Models

In the syntax of sign language, space is used to directly represent either real or imaginary spatial relations: this happens either by simply pointing or, for instance, by raising one's hand to represent an upward motion. The language – world relation cannot get more iconic than that. It is impossible to assume that between the syntax and the referent (which stand in an iconic relationship to each other) there is somehow an intervening (non-iconic, 'digital') level which first destroys and then restores the iconic relationship. This result can be generalized to the iconicity of spoken language too (cf. above).

It is interesting to note that the syntax of sign language has in many respects the same structure as Johnson-Laird's (1983; 1996) mental models. To see this, one only needs to compare how such meanings as 'A is on the right of B' and 'B is in front of C' are represented in mental models (cf. 1996: 446–448), and how the same spatial relations are expressed in American Sign Language (cf. Emmorey, 1996: 175–178). Needless to say, Johnson-Laird squarely bases his concept of 'mental model' on the concept of iconicity: "The parts of the [mental] model correspond to the relevant parts of the situation, and the structural relations between the parts of the model are analogous to the structural relations in the world" (1996: 438; italics added). Mental images are defined as 'perceptual correlates' of mental models.

C) The Iconicity between Preverbal Cognition and Language

The so-called habituation method concentrates on the direction and duration of the infant's gaze. It has been used to investigate the physical, biological, and psychological world-views of 4–9 month old children by Spelke, Mandler, Thomasello, and others (for English-language and Finnish-language surveys, see Itkonen, 2002: 155–157 and 2001: 379–381, respectively).

These results conclusively refute the view that 'there is no thinking without language' or that 'language creates thought'. (It is a different matter that, quite obviously, there is no abstract thinking without language.) Moreover, a natural explanation is provided for the fact that in the world's languages there are systematic means to express, in addition to central everyday concepts, such basic conceptual distinctions as thing vs. action, animate vs. inanimate, agent vs. patient, causal vs. non-causal, intentional vs. non-intentional, and so on. The explanation is that language merely expresses what existed before, namely prelinguistic cognition.

Piagetian developmental psychology starts from the premise that thinking (qua internal action) is produced by sensori-motor behavior (qua external action). Now, as shown by the use of the habituation method, it is wrong to assume that sensori-motor, e.g. manual, behavior constitutes some sort of absolute starting point for the emergence of thinking. On the other hand, it seems just as undeniable now as it seemed before that, once thinking has emerged, there is some sort of general correlation between the development of sensori-motor behavior and the development of thought.

Langer (1980; 1986) is a large-scale longitudinal study of cognitive development based on sensori-motor evidence. The subjects are 6–to–24-month old children who are investigated at eight separate stages. The study is based on how children manipulate either discrete objects like plastic stars, rings, cups, and spoons or non-discrete objects like balls and rings made of wax. This manual behavior is accompanied by gaze and babble.

Since I am interested to know what cognition is like just before the emergence of language, I shall concentrate on one age group, namely children at the age of 12 months. I shall enumerate a number of manual operations that children regularly perform when they have reached this age.

At the age of 12 months, instead of manipulating just one object, children have started to manipulate two or more objects (Langer, 1980: 326). The most common forms of manipulation are joining and separating. Objects constitute a set (more often horizontal than vertical) to whose members the following operations may be applied: addition and deletion (p. 314–325, 357–364), substitution and permutation (p. 337–344). Coordination is manifested in repeated bipartite operations like picking and squeezing a piece of wax (p. 386–387). Negation and identification are manifested e.g. when a child takes a ring of wax, squeezes it, and then restores it into its original shape (p. 386–387). Mastery of one-to-one correspondence or analogy is manifested when, e.g., two spoons are first put into their respective cups and then taken out (p. 303–309, 339, 348).

It is easy to detect the following linguistic analogues. The transition from one to two (or more) objects has its counterpart in the subsequent transition from one-word to two-word utterances. Joining or combining is of course the basic syntactic operation, but it may be added that, ever since Aristotle, affirmation and negation have been semantically conceptualized as, respectively, the combination and the separation of the contents of the subject and the predicate (cf. UHL: 177). Addition and deletion are operations presupposed, inter alia, by the notions of optionality and ellipsis. Substitution is presupposed by the notion of syntactic frame. Permutation is the basis for cor-

responding word order changes (or 'transformations'). Coordination, negation, and identification are expressed by the corresponding types of sentences.

It is undeniable that the manual behavior described above would not be possible without corresponding cognitive processes; it is also clear that manual behavior has analogues in (subsequent) linguistic behavior. Now, it cannot of course be proved that prelinguistic cognition equally causes the manual behavior and the linguistic behavior, or that the two types of behavior emanate from some more abstract source that subsumes prelinguistic and linguistic cognition. However, it would be artificial and uneconomical to assume, in conformity with the modularity hypothesis, that a great number of (nearly) identical processes are operating independently in different cognitive domains.

The significance of Langer's results resides in the fact that they may be used to explain the basic structure of all languages, whether spoken or signed. A sentence is a combination of words that represent various semantic roles. Sentences exemplify structures in which words may be replaced by other words. Some words are optional, and others may be moved into a new position. In addition to expressing states of affairs that involve (participants exemplifying) various semantic roles, sentences may express identification; they may be negated; they may be combined, as in coordination.

D) Additional Confirmation from Jackendoff & Co.

Motto: "Syntax presumably evolved as a means to express conceptual structure, so it is natural to expect that some of the structural properties of concepts would be mirrored in the organization of syntax" (Jackendoff, 1992: 39; italics added).

Speaking of 'conceptual structure' seems to be a way to avoid speaking of the extra-linguistic reality. But why should we try to avoid speaking about it? This is what we in fact talk about when we use language. We do not talk about conceptual structure, we talk about reality. The view that language is about concepts is just a hangover from the 17th and 18th century philosophy. At the time, it was seriously maintained that if I say A dog bit me, I am just saying something about the concepts of 'dog', 'to bite' and 'me' (cf. UHL: 274), which is ridiculous. On the other hand, it goes without saying that we cannot talk about reality an sich, but only about reality-as-conceptualized. Thus, the Jackendoff-quotation really amounts to saying that the structure of syntax reproduces, iconically, the structure of reality(-as-conceptualized).

If there is an iconic relation between A and B, it does not make sense to claim that A and B are 'informationally encapsulated' from each other. To reformulate the issue in current modular terms, we have conceptual structure and syntactic structure (as part of the language module) as well as the "conceptual-to-syntactic-structure interface" linking the two. Van der Zee and Nikanne (2000) assume a pervasive analogy between conceptual structure and syntactic structure. For instance, a verb like send selects its "syntactic arguments" just like its conceptual counterpart selects its "conceptual arguments"; and van der Zee and Nikanne insist (p. 10) that "the linking between these linguistic representations and conceptual structures *must* be somehow transparent" (italics added). But if it is transparent (i.e. iconicity-based), it cannot be 'informationally encapsulated', which means that it cannot be modular.

Let us quote CGP again: "Similarly, having noted that spatial language makes very fine distinctions between physical shapes of objects, but is much less constrained when it has to express physical locations and movements, Jackendoff (1992: Ch. 6) refuses to accept this fact as just an aspect of the innate linguistic endowment. Rather, he wishes to explain it by postulating a distinction between 'what' and 'where' in the organization of spatial representation, and by regarding the linguistic asymmetry merely as a reflection of this conceptual asymmetry. Inconsistently, however, he thinks he has shown that in this area there is no need for functional explanations (e.g. explanations referring to the efficacy of the asymmetry in question). He fails to see that his own explanation is thoroughly functional, though in a more general sense: It is the function of language to speak of the external world as it has been conceptualized by man" (p. 497; the first emphasis added; cf. also Itkonen, 1995).

3. LANGUAGE – VISION; LANGUAGE – MUSIC

Claim: "There seems to be no useful analogy between the theory of grammar ... and any other cognitive system that has so far been isolated and described" (Chomsky, 1972: 90). Counter-claim: "Figure – ground differentiation is perhaps the most ubiquitous mode of perceptual organization. Indeed, there is some form of figure – ground differentiation in *all* domains of sensory experience" (Slagle, 1975: 336; italics added).

The 'figure vs. ground' distinction has become central to today's cognitive linguistics (even if the terms 'trajectory' and 'landmark' are sometimes preferred). This terminology carries with it a strong methodological commitment to the ultimate unity of all types of perceptual experience, as suggested by Slagle above. Such a unity is diametrically op-

posed to any form of modularity. The same is true of the notion of 'perspective', as utilized in cognitive linguistics.

In no language is the sentence-structure entirely 'flat' or string-like. Rather, it exemplifies, to varying degrees, the concept of hierarchy. Insofar as obligatory units can be considered as heads of those constructions in which they occur together with optional units, the syntactic structure may be qualified, more narrowly, as a headed hierarchy. Taking a de facto anti-modular stand, Jackendoff (1987: 249–251) observes the occurrence of headed hierarchies not only in language, but also in vision and music. In the same anti-modular vein, van der Zee and Nikanne (2000: 5–7) point out that headed hierarchies occur not just in linguistic, conceptual, and spatial representations, but also in motoric representations.

We see that Jackendoff seems anxious to establish the analogy between language and other cognitive domains and thus, unwittingly, to argue against modularity. For instance, he claims that "producing visual images is more or less *analogous* to speech production", and "linguistic imagery [i.e. 'hearing sentences in our heads'] is a precise *parallel* to visual imagery" (1992: 11; italics added). "The relation of images to image schemas (SRs) [= 'geometric' spatial representations] in the present theory is much like the relation of sentences to thoughts [= 'algebraic' conceptual structures]" (1996: 10). In other words, we have the following analogy:

$$\frac{\text{sentences}}{\text{thoughts}} = \frac{\text{images}}{\text{image schemas}}$$

Interestingly, Jackendoff seems unaware of the fact that by postulating in this way an analogy between language and vision, or be-

tween language and music, he flatly contradicts Chomsky, who denies the possibility of any such analogy (cf. above). Moreover, analogy is the governing principle not only between, but also inside Jackendoff-type modules: "The upshot is that the correspondence between syntax and CS [= conceptual structure] is much like the correspondence between syntax and phonology" (1996: 7). This (conjoined) analogy may in turn be represented as follows:

$$\frac{\text{phonology}}{\text{syntax}} = \frac{\text{syntax}}{\text{conceptual structure}}_{\text{(= 'thought')}}$$

Jackendoff (1996) accepts the hypothesis of dual coding in the sense that conceptual structure is 'algebraic' whereas spatial representation is 'geometric'. We have already seen that this type of dichotomy is misleading. Conceptual structure cannot be (entirely) algebraic, because it mediates between morpho-syntax and (the conceptualization of) extralinguistic reality which stand in an iconic (= 'geometric') relation to each other.

The work of David Marr has been influential in the study of vision. His theory contains three levels, namely 'computational theory', 'algorithm', and 'implementation'. The first of these defines the task, or what has to be done. The second shows how it is done, at the level of abstract instructions. The third shows how the instructions are carried out by some concrete mechanism. The first two levels correspond, respectively, to the set-theoretic and algorithmic conceptions of a function (cf. CLT: 149–150). There is a close analogy between linguistics and the Marr-type theory of vision insofar as the three levels mentioned above correspond quite exactly to three distinct types of linguistic subdiscipline, namely auton-

omous linguistics, psycholinguistics, and neurolinguistics. Each of these three has its own ontology, on the continuum 'conceptual > psychological > neurological'. (The term 'conceptual' is used here in the sense in which we speak, within analytical philosophy, of 'conceptual analysis'.)

It is important to realize that the designations of Marr's three levels are likely to create misunderstandings. The term 'computation', as used e.g. by Minsky (1967) in the title of his foundational book, is identical with algorithm. As noted above, the task to be performed can be defined e.g. in set-theoretic terms, which do not entail computations (i.e. 'acts') of any kind. Therefore it is unfortunate that Marr applies the term 'computation' to this (de facto non-computational) level. This curious choice of terminology may have obscured the basic analogy between language and vision.

Next, le us turn to music. It is quite easy to see the analogy between the musical structures and the linguistic structures, as suggested by Jackendoff (cf. Itkonen, 1998). The 'grouping structure' strongly resembles the constituent structure of a sentence. The fact that the same type of structure seems to be "involved in any sort of temporal pattern perception [and production]" (Jackendoff, 1987: 221), does nothing to diminish the importance of this overall similarity. Rather, it constitutes a general argument for anti-modularity.

The 'metrical structure' is practically the same in language and in music; for instance, Jackendoff (1987: 79) analyzes the metrical structure of the expression American history teacher as 121141131, in much the same way he analyzes the opening line of Mozart, K. 550.

At the level of 'time-span reduction', the distinction between theme and variation closely parallels that between obligatory and obligatory-cum-optional constituents (cf. The boy ate an apple vs. The little boy hastily ate a red apple); and both in language and in music, the obligatory constituents are the 'heads' of their respective domains. It is curious that Jackendoff does not point this out explicitly, especially since Sapir (1921: 36), for instance, applied the same term, i.e. 'reduction analysis', to the method of finding out the obligatory constituents of a sentence. (It may be added that this method was already practiced by Apollonios Dyskolos, the first syntactician of the Western tradition; cf. UHL: 202–203). The 'theme vs. variation' distinction is also paralleled, in the linguistic domain, by the distinction between a sentence in its basic form and any of its stylistic variants (The boy ate an apple vs. An apple was eaten by the boy, It was an apple that the boy ate, etc).

Finally, the distinction between the levels of time-span reduction and 'prolongation reduction' parallels that between the levels of sentence and text (or discourse). Again, Jackendoff fails to mention this obvious fact.

While Jackendoff is content to analyze the structural aspect of music in chapter 11 of his 1987 book, he turns to the question of how music is processed (i.e. heard and understood) in chapter 7 (= 'Musical parsing and musical affect') of his 1992 book. He notes explicitly (p. 125) that he will proceed "by analogy with evidence from the processing of language", a problem that he had addressed in chapter 6 of his 1987 book. His solution is, briefly, that both language and music are understood by constructing parallel interpretations, from among which one will ultimately prevail. This is certainly plausible.

By now it has become evident that Jackendoff's overall argument contains the fol-

lowing oddity. On the one hand, he continuously uses such words as 'analogy', 'similarity', and 'parallelism'; and he clearly assumes that the plausibility of the hypothesis that language is processed in a parallel fashion supports the hypothesis that music is processed in the same way. On the other hand, as a "deeply committed Chomskian" (1992: 53), he accepts Chomsky's view that language and (e.g.) music are separate mental modules. But this is inconsistent: if language and music are independent of each other, then any similarity between the two is due to chance; and results achieved in one domain cannot possibly support hypotheses about the other domain.

4. LANGUAGE = SOCIAL COGNITION; LANGUAGE = LOGIC

Wittgenstein's 'private-language argument' proves that rules of language are necessarily (and not contingently) public or social (cf. GTM: 109–113; more succinctly CGP: 475–476). Therefore it does not make sense to separate language from social cognition. Chomsky disagrees: "As for the fact that the rules of language are 'public rules', this is indeed a contingent fact" (1975: 71; italics added). "...our scientist S ... studies language exactly as he studies physics, taking humans to be 'natural objects' " (1976: 183; italics aded). "[I-languages are] real elements of particular minds/brains, aspects of the physical world" (1986: 26; italics added).

Now, let us focus on Jackendoff. As a "deeply committed Chomskian" (1992: 53), he accepts the latter's concept of linguistics in general and of I-language in particular. On the other hand, he also accepts, in Ch. 4 of his 1992 book, the innateness of some social concepts, in particular that of 'person' (in addition to 'request', 'transaction', and 'ownership'). This commits him to the

following scenario: "When you meet a person, he is a social being; but as soon as he starts to speak, be miraculously changes into a physical, non-social being" (CGP: 476).

As for the relation between language and logic, it is useful to point out that Paul Lorenzen's dialogical or game-theoretic conception of logic considers formal logic as being a reconstruction, and a refinement, of some aspects of ordinary language (= "die angegebenen Dialogregeln rekonstruieren umgangssprachliches Verhalten"); cf. Itkonen (2003: Ch. 4). If this is admitted, it no longer makes sense to separate language and logic (as two distinct 'modules'). To be sure, logic can also be viewed as part of preverbal cognition discussed above. But then it is iconically expressed by language and, therefore, cannot be an 'informationally encapsulated module' vis-à-vis language.

5. THE PSEUDO-ARGUMENT FOR MODULARITY: "MODULARITY IS NEEDED TO EXPLAIN LANGUAGE-ACQUISITION (= LA)"

A) 'Learning Forms without Meanings'

As shown by iconicity, the linguistic form (= phonology & syntax) has been determined by its function. This is also admitted by Jackendoff, at least implicitly: because it is the function of linguistic form to speak about (the conceptualization of) the extralinguistic reality, the structure of the former has come to mirror the structure of the latter (cf. above). This is just one particular exemplification of the general truth that the form of any instrument (e.g. spade) has been determined by its function (here: digging earth).

Following Chomsky, Jackendoff identifies linguistic form with language tout court. Now, it does not make sense to concentrate

on the form of instruments alone, in separation of their functions. So why is this done with respect to language? The answer is given by Matthews (1989: 61):

"Rationalists have typically construed primary data as syntactic in character. Chomsky, for example, concedes that semantic information may facilitate syntax acquisition; however, he doubts that such information plays any role in determining how learning proceeds. Chomsky's reluctance to include semantic information, despite a number of studies that seem to indicate the relevance of such information, presumably stems from worries as to how the learner could possibly glean a sentence's meaning from the context of utterance."

The Matthews-quotation has been commented upon in CGP: 485–486 as follows:

"Chomsky admits, although reluctantly, the de facto importance of semantics, but he dismisses it because he does not know how to handle it. Notice what this really means. There are two positions here: P-1 = 'Language-acquisition requires syntax and semantics' and P-2 = 'Language-acquisition requires only syntax'. Chomsky admits that P-1 is true. P-1 excludes P-2, which means that Chomsky must admit that P-2 is false. However, he does not know how to handle (i.e. how to formalize) P-1. Therefore, he rejects P-1 (which, to repeat, he knows to be true) and chooses P-2 (which he knows to be false). [...]

It has sometimes been suggested that even if learnability theory rests on a false assumption [i.e. the learning of 'pure forms'], the precision that it brings to the study of language-acquisition is valuable in itself. My reply is that if someone claims to be able to measure the flatness of the Earth with nanometric precision, I am not impressed (because the Earth is not flat). I much prefer

a less precise but more truthful description like 'The Earth is roughly spherical'."

Thus, the Chomsky-type modularity assumes that there is such a thing as 'learning forms without meanings'. Seven arguments are adduced in CGP: 483–485 to prove the falsity of this assumption.

B) The 'Fact of LA'

Modularity is invoked to explain what is called the 'fact of LA': LA is claimed to be rapid and based on limited and degenerate evidence, and even on no evidence at all (because children are supposed to need 'negative evidence', and — it is claimed — there is no such evidence because "ungrammatical utterances do not come labeled as ungrammatical").

This view of LA is based on a series of factually false assumptions. First, LA is not rapid but slow (unless it is compared to the corresponding process in the adults, which would be a category mistake). Second, the data is neither limited nor degenerate. Third, ungrammatical utterances do come labelled as ungrammatical.

Concerning the third point, consider this: "Notice, however, that slips of the tongue are normally corrected, which could be taken to mean that incorrect forms do come labeled as incorrect; cf. Wittgenstein (1958, I, para. 54): 'But how does the observer distinguish ... between players' mistakes and correct play? ... There are characteristic signs of it in the players' behavior. Think of the behavior characteristic of correcting a slip of the tongue. It would be possible to recognize that someone was doing so even without knowing the language.' "(CGP: 479, n. 7). — Once the existence of this phenomenon had been anticipated and hypothesized about by Wittgenstein and Itkonen, it was

left to Hokkanen (2001) to empirically verify the corresponding hypothesis.

C) 'LA as Instantaneous'

Finally, the Chomskyan conception of LA contains the "simplifying idealization" that LA takes place instantaneously (e.g. 1986: 52). According to this view, LA contains only two stages: first zero, then full mastery. Why is this idealization not just simplifying, but decidedly harmful? Because it conceals the fact that LA contains at least three qualitatively distinct stages: first zero, then learning, then mastery:

"The existence of a rule cannot be established experimentally or by observing actual behavior. Rather, a rule must be learned; and once it has been learned, it gives us a criterion with which we may evaluate actual behavior as either correct or incorrect. Of course, learning involves both observing and hypothesizing. But when one has learned a rule, it is known, which means that one knows how to act correctly..." (GTM: 43).

As described in this passage, learning to master a rule-system (like a language) always involves a leap from non-mastery to mastery. What is this leap? It is the leap from 'is' to 'ought', or more elaborately, the leap from observing what is done to knowing what ought to be done. This is also the leap from observation to intuition: first, observing people's speech; second judging, on the basis of one's intuitive knowledge of language, whether people's speech is correct or not.

If you are not convinced by the preceding argument, maybe you prefer to be convinced by the following version of the same argument: "The analysis of the linguistic scientist is to be of such a nature that the linguist can account also for utterances which are not in his corpus at a given time.

... He must be able to predict what other utterances the speakers of the language might produce... The analytical process thus parallels what goes on in the nervous system of a language learner, particularly, perhaps, that of a child learning his first language. ...; by a process of trial and error... the child eventually reaches the point of no longer making 'mistakes'. Lapses there may still be — that is, utterances ... [followed] by simple partial repetition with the lapse eliminated. But by the time the child has achieved linguistic adulthood, his speech no longer contains errors; for he has become an authority on the language, a person whose ways of speaking determine what is and what is not an error. ... The child in time comes to behave the language; the linguist must come to state it" (Hockett 1957 [1948]).

Notice, incidentally, that these few quotations from Hockett are sufficient to demolish the Chomskyan myth of what the American pre-generative linguistics looked like (cf. such charicatures as "non-psychological, non-predictive description of closed corpora"). Notice also that Hockett mentions as a matter of course the phenomenon hypothesized by Wittgenstein & Itkonen and verified by Hokkanen.

6. WHY MODULARITY? BECAUSE CHOMSKYAN LINGUISTICS IS AN EXPLANANS IN SEARCH OF AN EXPLANANDUM

"Once the reader has reached this point, he may have started to puzzle over the nature of Chomskyan linguistics: it is a psychological or even biological theory without any psychological facts, a theory looking for universal features, but telling in advance that whatever it will find, is unexplainable. In my opinion, these puzzling aspects of Chomskyan linguistics can be un-

derstood only if they are put in an historical perspective. ...

... If the mind is assumed to rest on a neurophysiological foundation, and if language is declared to be a module of the mind, and if syntax is declared to be the central module of language, then it might almost seem that one has indeed acquired the right to study English syntax and call it neurophysiology.

In the present context it is less important that Chomsky's theory of syntax has undergone several modifications. What is important, is the fact that while he has continued to analyze the syntax of English by means of self-invented sentences which his own linguistic intuition deems either correct or incorrect, his interpretation of, and justification for, what he is doing has changed completely: from anti-mentalist distributional analysis he has moved first to mentalist syntax and then to biology.

Once generative syntax had been invented, something had to be done with it, i.e. it had to be used to 'explain' something. With the passing of time the explanandum has been conceived of in increasingly ambitious terms: having started with distributional arrangements of English morphemes, Chomsky has now arrived at theoretical biology. Seen in perspective, innatism and modularity are not claims with empirical content. They are just excuses for Chomsky not to do anything different from what he has always done" (CGP: 498; italics added).

Let us clarify this a little. Biology, psychology, and linguistics (= distributional analysis) were three clearly distinct disciplines, when Chomsky started, and this is how he too viewed the situation at first (and how it should still be viewed). But then came his 'psychologistic' turn: He created the concept of 'competence', which was defined to be a psychological concept identical with

the grammar composed by the grammarian. Now distributional analysis had become psychology. Then came his 'biologistic' turn: He created the concept of 'modularity', intended to capture the general biological structure of the mind, and defined language as one module, totally independent of anything else that the mind might contain. Now distributional analysis had become biology. (In the meantime, he had decreed that UG can be investigated on the basis of one language only, which meant that the study of English became the study of UG.) Why did he perform all these breathtaking redefinitions? Because he wanted his theory to be all-encompassing, but did not want to do anything different from what he had always done (= intuition-based distributional analysis of English).

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The following abbreviations have been used in the preceding text: GTM = Itkonen 1978, CLT = Itkonen 1983, UHL = Itkonen 1991, CGP = Itkonen 1996

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MODULAARISUUS: KOLME ARGUMENTTIA VASTAAN, YKSI NÄENNÄISARGUMENTTI PUOLESTA

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Tässä artikkelissa esitetään kolme argumenttia sitä käsitystä vastaan, että kieli olisi "informationaalisesti eristynyt moduuli": kielen rakenne heijastaa ikonisesti kielenulkoisen maailman ja lasten esikielellisten käsitteiden rakennetta; kielikyvyn rakenne on periaatteessa sama kuin näkökyvyn ja musikaalisen kyvyn rakenne; kielikyky lankeaa yhteen loogisen kyvyn ja sosiaalisen kyvyn kanssa. (Siispä nämä neljä kykyä eivät voi olla kielestä kokonaan irrallisia moduuleja.) Modulaarisuushypoteesin puolesta on esitetty se pseudoargumentti, tetä sitä tarvitaan kielenoppimistapahtuman selittämiseksi. Mutta sen todellinen tarve voidaan ymmärtää vain Chomskyn henkilöhistoriasta käsin. Englannin syntaksin intuitioperustainen kuvaus voidaan tulkita maailman kaikkia kieliä koskevan teoreettisen biologian harjoittamiseksi vain sillä ehdolla, että yhden kielen katsotaan luotettavasti edustavan kaikkia kieliä ja tämä kieli (jonka perusta on väistämättä biologinen) oletetaan moduuliksi, so. ilmiöksi, jota sopii tutkia ottamatta mitään muuta ilmiötä huomioon.

Avainsanat: modulaarisuus, analogia, ikonisuus